IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 1-13 (canceled)

14.   (new)   A process for optical detection and reconstruction of surface profiles, comprising

illuminating the surfaces to be examined from different directions with a shallow angle of incidence,

preparing images of the surface from a camera position with an acute angle to the surface, and

extracting the contours of cast shadows on the images and determining the elevation profiles or relief of structures based on light incidence angle and camera position.

15.   (new)   A process according to Claim 14, wherein the camera is provided nearly perpendicular to the surface.

16.   (new) A process according to Claim 14, wherein the angle of incidence of the light is less than 10° to the surface.

17.   (new) A process according to Claim 14, wherein the cast shadows on the images are extracted by formation of quotients of light intensity values of corresponding image points.

18.   (new) A process according to Claim 17, wherein the contours of the cast shadows are determined by means of the "binary-connected-component" method.

19.   (new) A process according to Claim 14, wherein contours of bright light reflection on the images are also selected and evaluated for construction of strongly tilted areas of the surface, for example a raised flank.

20. (new) A process according to Claim 19, wherein the contours of bright light reflection are thereby determined, that the reflected light intensity exceeds a predetermined threshold value.

21. (new) A process according to Claim 14, wherein supplementally light intensity distributions are evaluated according to the shape-from-shading method and employed for reconstruction of the surface structures.

22. (new) A process according to Claim 21, wherein in the reconstruction of the surface contours first the surface profile of the surface to be reconstructed is determined by suitable initialization by means of shape-from-shading method,

wherein subsequently the angle between each surface element and the light incident angle responsible for the shadow image light incident direction is multiplied with a constant factor such that the average height difference on the reconstructive profile corresponds to the determined average height difference according to the above explained shadow analysis,

wherein in the next step as initialization by means of the shape-from-shading method a new surface profile is calculated, and

wherein this process is iteratively repeated until the average change of the height profile between the two sequential iteration steps is smaller than a predetermined threshold value.

23. (new) A process according to Claim 22, wherein in an iterative minimization in the framework of the shape-from-shading this is improved to the extent, that in the error function to be optimized a supplemental error term is added, wherein this added term corresponds to the deviation of the height difference in the light incident direction determined reconstructed height profile in the previous iteration step from the corresponding height difference determined by means of shadow analysis.

24. (new) A process according to Claim 23, wherein for initialization of the iterative minimization the result of the process is employed

wherein in the reconstruction of the surface contours first the surface profile of the surface to be reconstructed is determined by suitable initialization by means of shape-from-shading method,

wherein subsequently the angle between each surface element and the light incident angle responsible for the shadow image light incident direction is multiplied with a constant factor such that the average height difference on the reconstructive profile corresponds to the determined average height difference according to the above explained shadow analysis,

wherein in the next step as initialization by means of the shape-from-shading method a new surface profile is calculated, and

wherein this process is iteratively repeated until the average change of the height profile between the two sequential iteration steps is smaller than a predetermined threshold value.

25.   (new) A process for optical detection and reconstruction of planetary surface profiles, comprising

illuminating the surfaces to be examined from different directions with a shallow angle of incidence,

preparing images of the surface from a camera position with an acute angle to the surface, and

extracting the contours of cast shadows on the images and determining the elevation profiles or relief of structures based on light incidence angle and camera position.

26.   (new) A process for optical detection and reconstruction and inspection of surfaces of industrially manufactured components, comprising

illuminating the surfaces to be examined from different directions with a shallow angle of incidence,

preparing images of the surface from a camera position with an acute angle to the surface, and

extracting the contours of cast shadows on the images and determining the elevation profiles or relief of structures based on light incidence angle and camera position.